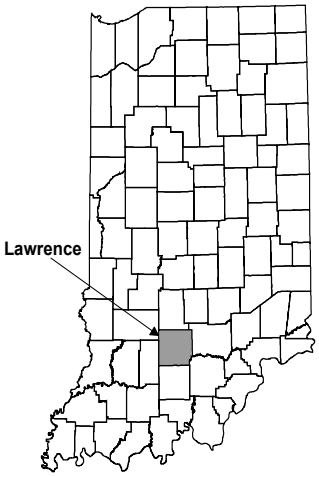
FLOOD INSURANCE STUDY

LAWRENCE COUNTY, INDIANA
AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
BEDFORD, CITY OF	180148
LAWRENCE COUNTY	
UNINCORPORATED AREAS	180441
MITCHELL, TOWN OF	180383
OOLITIC, TOWN OF	180332



PRELIMINARY:

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
18093CV000A

NOTICE TO FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) report may not contain all data available within the Community Map Repository. Please contact the Community Map Repository for any additional data.

The Federal Emergency Management Agency (FEMA) may revise and republish part or all of this FIS report at any time. In addition, FEMA may revise part of this FIS report by the Letter of Map Revision process, which does not involve republication or redistribution of the FIS report. Therefore, users should consult with community officials and check the Community Map Repository to obtain the most current FIS report components.

Effective Date:

Revised Dates:

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FLOOD INSURANCE STUDY

LAWRENCE COUNTY, INDIANA AND INCORPORATED AREAS

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study (FIS) revises and supercedes the FIS reports and Flood Insurance Rate Maps (FIRMs) in the geographic area of Lawrence County, Indiana, including the Cities of Bedford and Mitchell, the Town of Oolitic, and the unincorporated areas of Lawrence County (hereinafter referred to collectively as Lawrence County), and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates and to assist the community in its efforts to promote sound floodplain management. This information will also be used by Lawrence County to update existing floodplain regulations as part of the Regular Phase of the National Flood Insurance Program (NFIP) and by local and regional planners to further promote sound land use and floodplain development. Minimum floodplain management requirements for participation in the National Flood Insurance Program (NFIP) are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the State (or other jurisdictional agency) will be able to explain them.

The Digital Flood Insurance Rate Map (DFIRM) and FIS report for this countywide study have been produced in digital format. Flood hazard information was converted to meet the Federal Emergency Management Agency (FEMA) DFIRM database specifications and Geographic Information System (GIS) format requirements. The flood hazard information was created and is provided in a digital format so that it can be incorporated into local GIS and be accessed more easily by the community.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

Information of the authority and acknowledgements for each of the new studies and previously printed FIS reports and Flood Insurance Rate Maps (FIRMs) for communities within Lawrence County was compiled and is shown below:

City of Bedford: The previously effective FIS for the City of Bedford is dated September 4, 1987. The hydrologic and hydraulic analyses for this study were performed by the U. S. Geological Survey for the Federal Insurance Administration, under Inter-Agency Agreement No. EMW-84-E-1548, Project Order No. 1. This study was completed in October 1985.

New Studies: The hydrologic and hydraulic analysis for approximate stream reaches of Lawrence County were performed by Christopher B. Burke Engineering, Ltd., on behalf of the Indiana Department of Natural Resources, under Indiana Public Works Project Number E400203. The Indiana Department of Natural Resources managed the production of this study as part of their Cooperating Technical Partner agreement with the Federal Emergency Management Agency dated April 29, 2004, which was defined by the Indiana DNR Mapping Activity Statement 05-08 dated June 23, 2005 and funded under agreement number EMC-2005-GR-7022.

Redelineation of the previously effective flood hazard information for this FIS report was performed by Christopher B. Burke Engineering, Ltd., on behalf of the Indiana Department of Natural Resources, under Indiana Public Works Project Number E400203. Correction to the North American Vertical Datum of 1988 and conversion of the unincorporated and incorporated areas of Lawrence County into the countywide format was performed by the Indiana Department of Natural Resources. The Indiana Department of Natural Resources managed the production of this study as part of their Cooperating Technical Partner agreement with the Federal Emergency Management Agency dated April 29, 2004, which was defined by the Indiana DNR Mapping Activity Statement 05-08 dated June 23, 2005 and funded under agreement number EMC-2005-GR-7022.

The coordinate system used for the production of the digital FIRMs is the Transverse Mercator projection, Indiana State Plane coordinate system, West Zone, referenced to the North American Datum of 1983 and the GRS 1980 spheroid.

1.3 Coordination

The purpose of an initial Consultation Coordinated Officer's (CCO's) meeting is to discuss the scope of the FIS. A final CCO meeting is held to review the results of the study. The dates of the initial and final CCO meetings held for the previously

effective FIS reports covering the geographic area of Lawrence County, Indiana are shown in Table 1. The initial and final CCO meetings were attended by the study contractor, FEMA (or the Federal Insurance Administration), the Indiana Department of Natural Resources (IDNR), and the affected communities.

Table 1: CCO Meeting Dates for Pre-Countywide FIS

Community Name	Initial CCO Date	Final CCO Date
Bedford, City of	March 26, 1984	September 29, 1986

For this countywide FIS, an initial CCO meeting was held on February 23, 2005 and was attended by IDNR, the Natural Resources Conservation Service (NRCS), the Lawrence County Soil & Water District, the State Emergency Management Agency, and representatives from the City of Bedford and Lawrence County.

The results of the countywide study were reviewed at the final CCO meeting held on , and attended by representatives of FEMA, IDNR and . All problems raised at that meeting have been addressed.

2.0 AREA STUDIED

2.1 Scope of Study

This FIS covers the geographic area of Lawrence County, Indiana, including the incorporated communities listed in Section 1.1

All FIRM panels for Lawrence County have been revised, updated, and republished in countywide format as a part of this FIS. The FIRM panel index, provided as Exhibit 2, illustrates the revised FIRM panel layout.

Approximate methods of analysis were used to study those areas having a low development potential or minimal flood hazards as identified during the initial CCO meeting. For this study, 3 new stream reaches were studied using approximate methods. The scope and methods of new approximate studies were proposed and agreed upon by FEMA, the IDNR, and Lawrence County.

This FIS update also incorporates the determination of letters issued by FEMA resulting in map changes (Letters of Map Change, or LOMCs). No LOMCs have been incorporated into the mapped changes. No Letters of Map Revision (LOMRs) have been issued for Lawrence County. Letters of Map Amendment (LOMAs) revalidated for this study are summarized in the Summary of Map Actions (SOMA)

included in the Technical Support Data Notebook (TSDN) associated with this FIS update. Copies of the TSDN may be obtained from the Community Map Repository.

TABLE 2 – STREAMS STUDIED BY DETAILED METHODS

Leatherwood Creek
South Fork Leatherwood Creek

TABLE 3 – STREAMS STUDIED BY APPROXIMATE METHODS

Adamson Branch Salt Creek
Back Creek
Bailey Branch Salt Creek
Brewer Branch Salt Creek
Chapman Creek
Clifty Branch Clear Creek
Crawford Creek
Crooked Creek
Dewitt Creek
Dry Branch Spring Creek
East Fork White River
Fishing Creek
Goose Creek
Gulletts Creek
Guthrie Creek
Henderson Creek
Hooper Creek
Howe Creek
Indian Creek
Knob Creek
Leatherwood Creek
Lick Branch East Fork White River
Little Salt Creek
McPike Branch Little Salt Creek
Mill Creek
Pleasant Run
Popcorn Creek
Rock Lick Branch White River
Salt Creek
Silverville Branch East Fork White River
South Fork Leatherwood Creek
Spider Creek
Spring Creek
Sugar Creek
Unnamed Tributary East Fork White River
White River
Wolf Creek

TABLE 4 – SCOPE OF STUDY

Stream	Limits of Detailed Study
East Fork White River	Lawrence-Martin county line to Jackson-Lawrence county line
Stream	**Limits of Approximate Study**
Goose Creek	Mouth to Section Line
Wolf Creek	Mouth to County Line
Unnamed Tributary East Fork White River	Mouth to County Line

2.2 Community Description

Lawrence County is located in south-central Indiana and is bordered by Monroe County to the north, Jackson and Washington Counties to the east, Orange County to the south and Martin and Greene Counties to the west. Lawrence County is located approximately 70 miles south of Indianapolis, Indiana, approximately 100 miles northeast of Evansville, Indiana, and approximately 70 miles north of Louisville, Kentucky. Lawrence County is served by US Route 50 and State Route 37. According to the Indiana Business Research Center, the population of Lawrence County in 2005 was reported to be 46,403.

The climate in Lawrence County is characteristically temperate continental. According to the National Oceanic and Atmospheric Administration (NOAA), average daily temperatures for Lawrence County range from 73 degrees Fahrenheit (F) in summer to 31 degrees F in winter. For the period of record between 1971 and 2000, annual average precipitation was approximately 45.2 inches.

The City of Bedford is located in central Lawrence County and is the county seat of government. The East Fork White River is located at the southern boundary of the corporate limits, Salt Creek is located in the western portion of the city, and Leatherwood Creek is located in the eastern portion of the city. Both Salt Creek and Leatherwood Creek are tributaries to East Fork White River. According to STATS Indiana, the population of Bedford in 2005 was 13,551.

The City of Mitchell is located south of Bedford along SR 37. According to STATS Indiana, the population of Mitchell in 2005 was 4,626.

The Town of Oolitic is located north of Bedford along SR 37. According to STATS Indiana, the population of Oolitic in 2005 was 1,123.

2.3 Principal Flood Problems

Major flooding in Lawrence County primarily occurs along the East Fork White River and its tributaries. Major floods principally occur during the winter and spring months, but can occur during any season. Generally, two types of storm events cause flooding. During the winter and spring, storms of moderate intensity and long duration, coupled with frozen ground, cause flooding to occur. During the summer, thunderstorms which have high intensities and relatively short durations can cause floods. Localized flood problems in the incorporated areas are summarized below:

City of Bedford: Flooding along Leatherwood Creek can occur any time of the year. Winter and spring rains generally cause the East Fork of White River to send backwater a few miles up Leatherwood Creek. Three major floods on Leatherwood Creek occurred in

March 1913, July 1973, and August 1982. The estimated return periods for the floods are over 500-year, over 500-year, and 50- to 100-year, respectively. These estimates are based on a comparison between the computed water-surface elevations and the 1913 high-water marks, a 1973 Flood Profile, and newspaper accounts of the 1982 flood. Accurate discharges are not available for these floods, which caused damage to buildings and bridges in and around Bedford's corporate limits.

Flooding in January 2005 occurred along the East Fork of the White River. This flooding was caused by a large snowfall in late December, followed by warm weather melting the snow and a significant amount of rain during the warm weather period. According to gage station data from the US Geological Survey, the January 2005 flood was the third highest on record, with the flood cresting at 511.03 feet, NAVD 1988, with an associated discharge of 92,300 cubic feet per second. The station is at river mile 153.3, has a drainage area of 3,861 square miles, and has been in operation since May 1939.

2.4 Flood Protection Measures

There are no dikes, flood levee systems, or flood control dams in the study area, nor are any planned. However, Monroe Lake, 26.1 miles upstream of the mouth of Salt Creek, serves as a flood control reservoir (flood storage 446,000 acre-feet) for Salt Creek.

3.0 ENGINEERING METHODS

For the flooding sources studied by detailed methods in Lawrence County, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 1-percent- annual-chance flood in any 50-year period is approximately 40 percent (4 in 10); for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses

reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analysis

Hydrologic analyses were carried out to establish peak discharge-frequency relationships for each flooding source studied by detailed methods affecting Lawrence County.

Table 2 contains a summary of peak discharges for the 10, 50, 100 and 500-year floods, where applicable, for each flooding source studied in detail in Lawrence County.

Table 5. Summary of Discharges

Flooding Source And Location	Drainage Area (Square Miles)	Peak Discharge (CFS) 10-Year	50-Year	100-Year	500-Year
Leatherwood Creek					
At I Street	38.3	6,600	8,900	10,500	14,300
Just downstream of Hawthorn Drive	34.4	6,200	8,400	10,000	13,600
Just upstream of confluence of South Fork Leatherwood Creek	19.2	4,700	6,400	7,500	10,200
South Fork Leatherwood Creek					
At Mouth	12.5	3,800	5,100	6,000	8,200

Standard and accepted hydrologic methods were used to develop discharge data on the study streams in Lawrence County.

The gaging station, East Fork White River near Bedford (No. 03371500), was the source of data for defining the discharge-frequency relationships for the East Fork White River at the confluence with Leatherwood Creek. The station is at river mile 153.3, has a drainage area of 3,861 square miles, and has been in operation since May 1939.

No USGS gaging stations are located on Leatherwood Creek. Therefore, to define discharge-frequency data, annual peak discharges from 11 nearby gaging stations with streamflow and basin characteristics similar to those of Leatherwood Creek were analyzed. A series of discharge-frequency curves were then developed and coordinated with the Indiana Department of Natural Resources, the Natural Resources Conservation Service (formally the Soil Conservation Service), the U. S. Geological

Survey and the Louisville District of the U. S. Army Corps of Engineers, through a Memorandum Of Understanding dated May 6, 1976. The analyses followed the standard log-Pearson type III method, as outlined by the US Water Resources Council (Reference 9), and also used previously coordinated discharge-frequency information (Reference, 10).

3.2 Hydraulic Analysis

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Users should be aware that flood elevations shown on the Flood Insurance Rate Map (FIRM) represent rounded whole-foot elevations and may not exactly reflect the elevations shown on the Flood Profiles or in the Floodway Data table in the FIS report. Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS report in conjunction with the data shown on the FIRM.

Cross sections for the backwater analyses were obtained from 2-foot contour maps compiled by photogrammetric methods for the September 4, 1987 study for the City of Bedford. All bridges and culverts were field surveyed to obtain elevation data and structural geometry.

Water-surface elevations for floods of the selected recurrence intervals were computed through use of the USGS WSPRO step-backwater computer program and the USGS E431 step-backwater computer program for streams originally studied in the City of Bedford Flood Insurance Study. Weir-flow and split-flow computations were performed at locations where road overflow occurred. For the new approximate study reaches, the USACE HEC-RAS program was used.

Flood profiles were prepared for all streams studied by detailed methods and show computed water-surface elevations for floods of the selected recurrence intervals. For this countywide FIS, flood profiles and approved LOMRs have been consolidated into continuous stream reaches and adjusted to reflect the current vertical datum as described in Section 3.3. In cases where the 50- and 100-year flood elevations are close together, due to limitations of the profile scale, only the 100-year profile has been shown.

Starting water-surface elevations for Leatherwood Creek were computed by slope conveyance. Starting elevations for all other streams studied in detail were determined using normal depth. The water-surface elevations for the East Fork White River were obtained form the stage-discharge relationship at the site of the former gaging station on the East Fork White River near Bedford (No. 03371500). The site is at river mile 145.8 and has a drainage area of 4,060 square miles.

Channel and overbank roughness factors (Manning's "n" values) used in the hydraulic computations were chosen by engineering judgment and were based on field observations of the stream and floodplain areas. Channel and overbank roughness factors used in the detailed studies are summarized by stream in Table 3.

Table 6. Channel and Overbank Roughness Factors

Stream	Roughness Coefficients: Main Channel	Roughness Coefficients: Overbanks
Leatherwood Creek	0.03-0.05	0.03-0.15
South Fork Leatherwood Creek	0.035-0.043	0.043-0.08

For new approximate study areas, analyses were based on field inspection and modeling of the stream reaches using simplified HEC-RAS models. Structural measurements or field surveying was not performed. Cross section geometry was derived from USGS topographic mapping with a maximum spacing of 490 feet. Starting elevations were assumed to be normal depth.

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the Flood Profiles (Exhibit 1) are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

3.3 Vertical Datum

All FIS reports and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum in use for newly created or revised FIS reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD29). With the finalization of the North American Vertical Datum of 1988 (NAVD88), many FIS reports and FIRMs are being prepared using NAVD88 as the referenced vertical datum.

All flood elevations shown in this FIS report and on the FIRM are referenced to NAVD88. Structure and ground elevations in the community must, therefore, be referenced to NAVD88. It is important to note that adjacent communities may be referenced to NGVD29. This may result in differences in Base Flood Elevations (BFEs) across the corporate limits between the communities. In this revision, a vertical datum conversion of -0.38 foot was calculated at the centroid of the county and used to convert all elevations in Lawrence County from NGVD29 to NAVD88 using the National Geodetic Survey's VERTCON online utility (VERTCON, 2005).

For more information on NAVD88, see the FEMA publication entitled Converting the National Flood Insurance Program to the North American Vertical Datum of 1988 (FEMA, June 1992), or contact the Vertical Network Branch, National Geodetic

Survey, Coast and Geodetic Survey, National Oceanic and Atmospheric Administration, Rockville, Maryland 20910 (Internet address http://www.ngs.noaa.gov).

Temporary vertical monuments are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the FIRM, they may be found in the Technical Support Data Notebook associated with the FIS report and FIRM for this community. Interested individuals may contact FEMA to access these data.

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. Therefore, each FIS provides 1-percent-annual-chance flood elevations and delineations of the 1- and 0.2-percent-annual-chance floodplain boundaries and 1-percent-annual-chance floodway to assist communities in developing floodplain management measures. This information is presented on the FIRM and in many components of the FIS report, including Flood Profiles, and the Floodway Data table. Users should reference the data presented in the FIS report as well as additional information that may be available at the local map repository before making flood elevation and/or floodplain boundary determinations.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent-annual-chance flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent-annual-chance flood is employed to indicate additional areas of flood risk in the community. For each stream studied by detailed methods, the 1- and 0.2-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using USGS topographic maps.

The 1- and 0.2-percent-annual-chance floodplain boundaries are shown on the FIRM (Exhibit 2). On this map, the 1-percent-annual-chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A, AE, V, and VE); and the 0.2-percent-annual-chance floodplain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 1- and 0.2-percent-annual-chance floodplain boundaries are close together, only the 1-percent-annual-chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

For the streams studied by approximate methods, only the 1-percent-annual chance floodplain boundary is shown on the FIRM (Exhibit 2).

4.2 Floodways

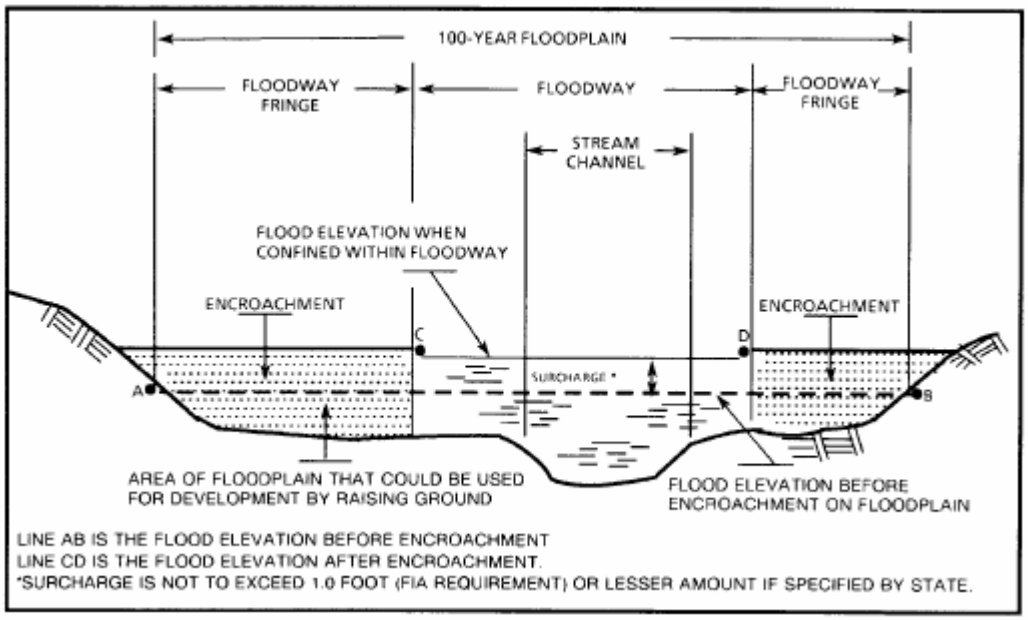
Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 1-percent-annual-chance floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 1-percent-annual-chance flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced.

The State of Indiana, however, per Indiana Code IC 14-28-1 and Indiana Administrative Code 312 IAC 10, has designated that encroachment in the floodplain is limited to that which will cause no significant increase in flood height. As a result, floodways for this study are delineated based on a flood surcharge of less than 0.15 feet. The floodways in this study were approved by the IDNR and are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodways presented in this FIS report and on the FIRM were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations have been tabulated for selected cross sections (Table 4). In cases where the floodway and 1-percent-annual-chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown.

The area between the floodway and 1-percent-annual-chance floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 1-percent-annual-chance flood more than the allowable flood surcharge limit at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 1.

Figure 1: Floodway Schematic



FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET/ SECOND)	REGULATORY (FEET, NAVD)	WITHOUT FLOODWAY (FEET, NAVD)	WITH FLOODWAY (FEET, NAVD)	INCREASE (FEET)
LEATHERWOOD CREEK								
A	4.08	454	2,877	3.6	510.0	502.4[2]	502.4	0.0
B	4.14	372	2,133	4.9	510.0	503.0[2]	503.0	0.0
C	4.36	399	2,361	4.4	510.0	504.9[2]	504.9	0.0
D	4.75	321	1,676	6.3	510.0	507.5[2]	507.5	0.0
E	4.93	308	2,015	5.2	510.0	509.4[2]	509.4	0.0
F	5.04	364	1,864	5.6	510.6	510.6	510.6	0.0
G	5.13	470	2,617	4.0	511.8	511.8	511.8	0.0
H	5.32	361	2,028	5.2	513.7	513.7	513.7	0.0
I	5.42	409	1,985	5.3	514.5	514.5	514.5	0.0
J	5.60	332	1,845	5.8	516.6	516.6	516.6	0.0
K	5.72	507	2,387	4.4	518.0	518.0	518.0	0.0
L	5.86	390	1,698	6.2	519.4	519.4	519.4	0.0
M	6.08	205	1,210	8.7	522.7	522.7	522.7	0.0
N	6.40	366	2,418	4.1	527.7	527.7	527.7	0.0
O	6.59	246	1,333	7.5	528.7	528.7	528.7	0.0
P	6.75	296	1,884	5.3	531.3	531.3	531.3	0.0
Q	6.87	258	1,877	5.3	532.9	532.9	532.9	0.0
R	7.66	592	2,474	3.0	539.5	539.5	539.5	0.0
S	7.80	660	1,995	3.8	540.7	540.7	540.7	0.0
T	7.95	560	2,462	3.0	542.1	542.1	542.1	0.0
U	8.06	480	1506	5.0	543.0	543.0	543.0	0.0
SOUTH FORK LEATHERWOOD CREEK								
A	0.29	418	1,244	4.8	540.1	540.1	540.1	0.0
B	0.40	487	1107	5.4	541.9	541.9	541.9	0.0

[1] MILES ABOVE MOUTH
[2] ELEVATIONS WITHOUT CONSIDERING BACKWATER EFFECT FROM EAST FORK WHITE RIVER

5.0 INSURANCE APPLICATIONS

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. These zones are as follows:

Zone A

Zone A is the flood insurance risk zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no BFEs or base flood depths are shown within this zone.

Zone AE

Zone AE is the flood insurance risk zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS by detailed methods. In most instances, whole-foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AH

Zone AH is the flood insurance risk zone that corresponds to the areas of 1-percent-annual-chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AO

Zone AO is the flood insurance risk zone that corresponds to the areas of 1-percent-annual-chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot base flood depths derived from the detailed hydraulic analyses are shown within this zone.

Zone AR

Zone AR is the flood insurance risk zone that corresponds to an area of special flood hazard formerly protected from the 1-percent-annual-chance flood event by a flood-control system that was subsequently decertified. Zone AR indicates that the former flood-control system is being restored to provide protection from the 1-percent-annual-chance or greater flood event.

Zone A99

Zone A99 is the flood insurance risk zone that corresponds to areas of the 1-percent-annual-chance floodplain that will be protected by a Federal flood protection system

where construction has reached specified statutory milestones. No BFEs or depths are shown within this zone.

Zone V

Zone V is the flood insurance risk zone that corresponds to the 1-percent-annual-chance coastal floodplains that have additional hazards associated with storm waves. Because approximate hydraulic analyses are performed for such areas, no BFEs are shown within this zone.

Zone VE

Zone VE is the flood insurance risk zone that corresponds to the 1-percent-annual-chance coastal floodplains that have additional hazards associated with storm waves. Whole-foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance risk zone that corresponds to areas outside the 0.2-percent-annual-chance floodplain, areas within the 0.2-percent-annual-chance floodplain, areas of 1-percent-annual-chance flooding where average depths are less than 1 foot, areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent-annual-chance flood by levees. No BFEs or base flood depths are shown within this zone.

Zone X (Future Base Flood)

Zone X (Future Base Flood) is the flood insurance risk zone that corresponds to the 1-percent-annual-chance floodplains that are determined based on future-conditions hydrology. No BFEs or base flood depths are shown within this zone.

Zone D

Zone D is the flood insurance risk zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.

6.0 FLOOD INSURANCE RATE MAP

The FIRM is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance risk zones as described in Section 5.0 and in the 1-percent-annual-chance floodplains that were studied by detailed methods, shows selected whole-foot BFEs or average depths. Insurance agents use the zones and BFEs in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols, the 1- and 0.2-percent-annual-chance floodplains, floodways, and the locations of selected cross sections used in the hydraulic analyses and floodway computations.

The countywide FIRM presents flooding information for the entire geographic area of Lawrence County. Previously, FIRMs were prepared for each incorporated community and the unincorporated areas of the County identified as flood-prone. This countywide FIRM also includes flood-hazard information that was presented separately on Flood Boundary and Floodway Maps (FBFMs), where applicable. Historical data relating to the maps prepared for each community are presented in Table 8, "Community Map History."

COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISIONS DATE	FIRM EFFECTIVE DATE	FIRM REVISIONS DATE
Bedford, City of	February 15, 1974	June 11, 1976	September 4, 1987	None
Lawrence, County of (Unincorporated Areas)	September 29, 1978	None	June 1, 1994	None
Mitchell, City of	April 25, 1975	None	to be determined	None
Oolitic, Town of	N/A	None	to be determined	None

TABLE 8

FEDERAL EMERGENCY MANAGEMENT AGENCY

LAWRENCE COUNTY, IN (ALL JURISDICTIONS)

COMMUNITY MAP HISTORY

7.0 OTHER STUDIES

This FIS report either supersedes or is compatible with all previous studies on streams studied in this report and should be considered authoritative for purposes of the NFIP.

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting the Flood Insurance and Mitigation Division, Federal Emergency Management Agency, Region V, 536 S. Clark Street, 6th Floor, Chicago, IL 60605

9.0 BIBLIORAPHY AND REFERENCES

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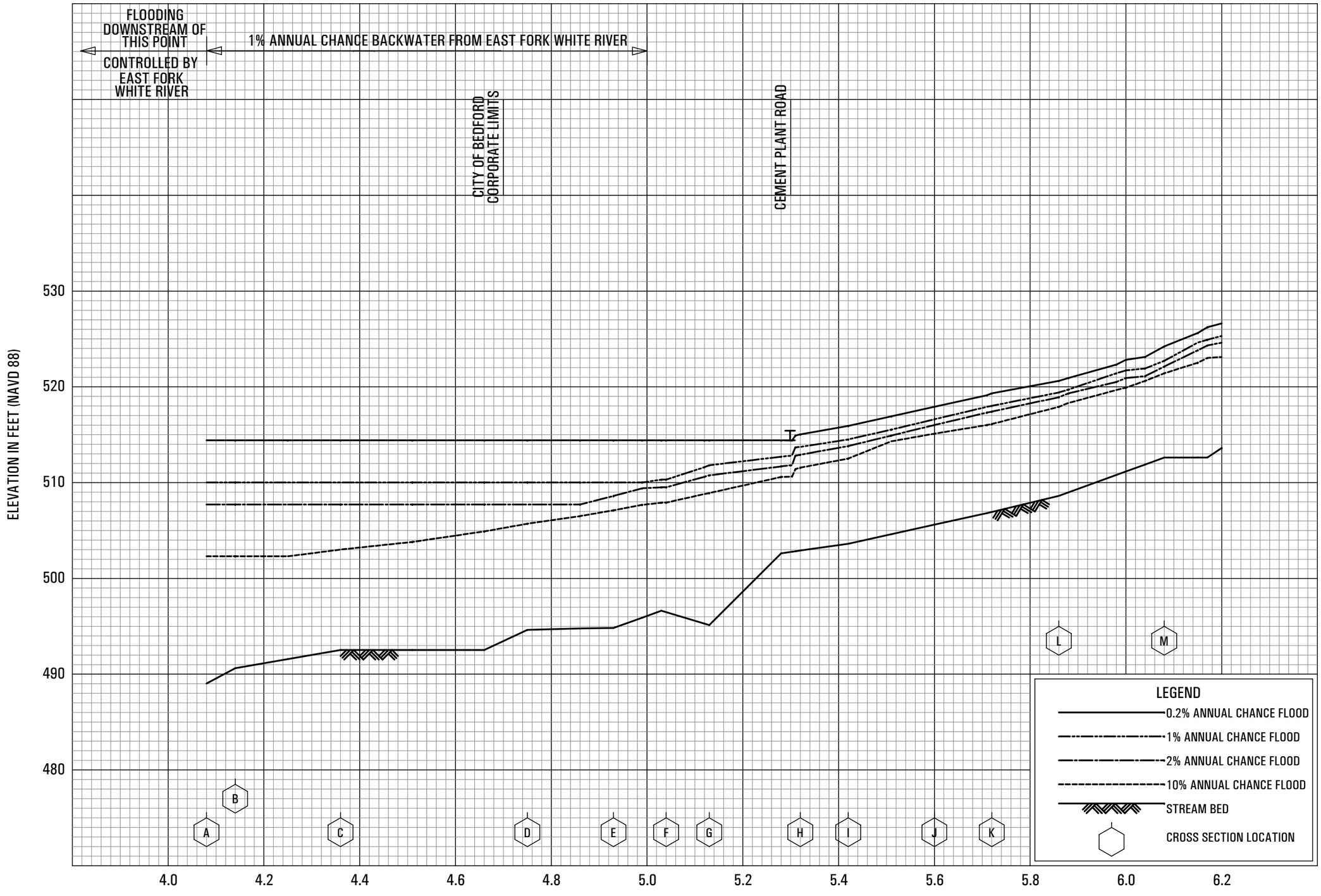
13. --------, *7.5 Minute Series Topographic Maps, Flood Prone Area*, Scale 1:24000, Contour Interval 10 feet: Bedford East, Indiana, 1970; Bedford West, Indiana, 1970; Bantlesville, Indiana, 1974; Oolitic, Indiana, 1981.



FLOOD PROFILES

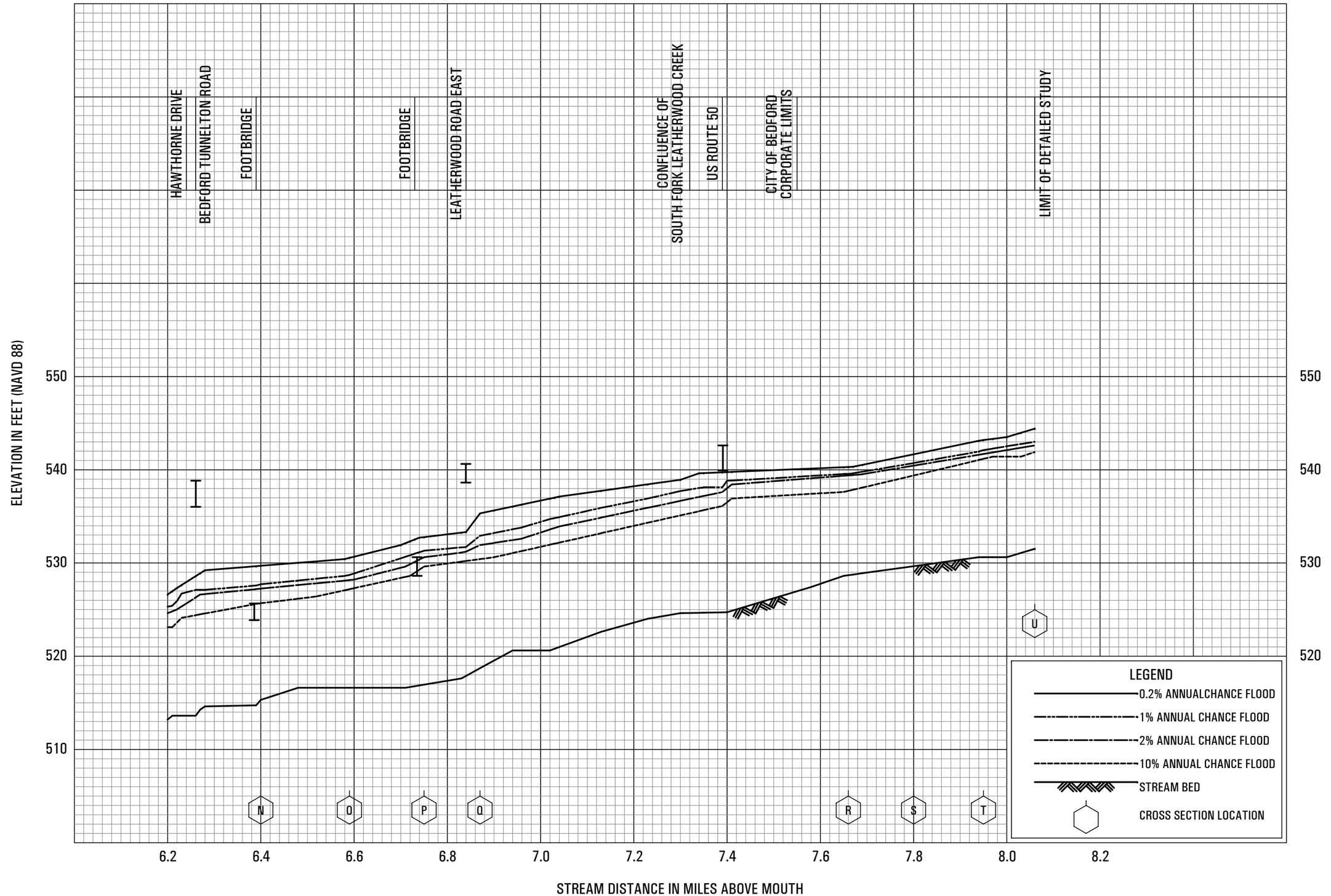
LEATHERWOOD CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LAWRENCE, IN

AND INCORPORATED AREAS

01P



FLOOD PROFILES

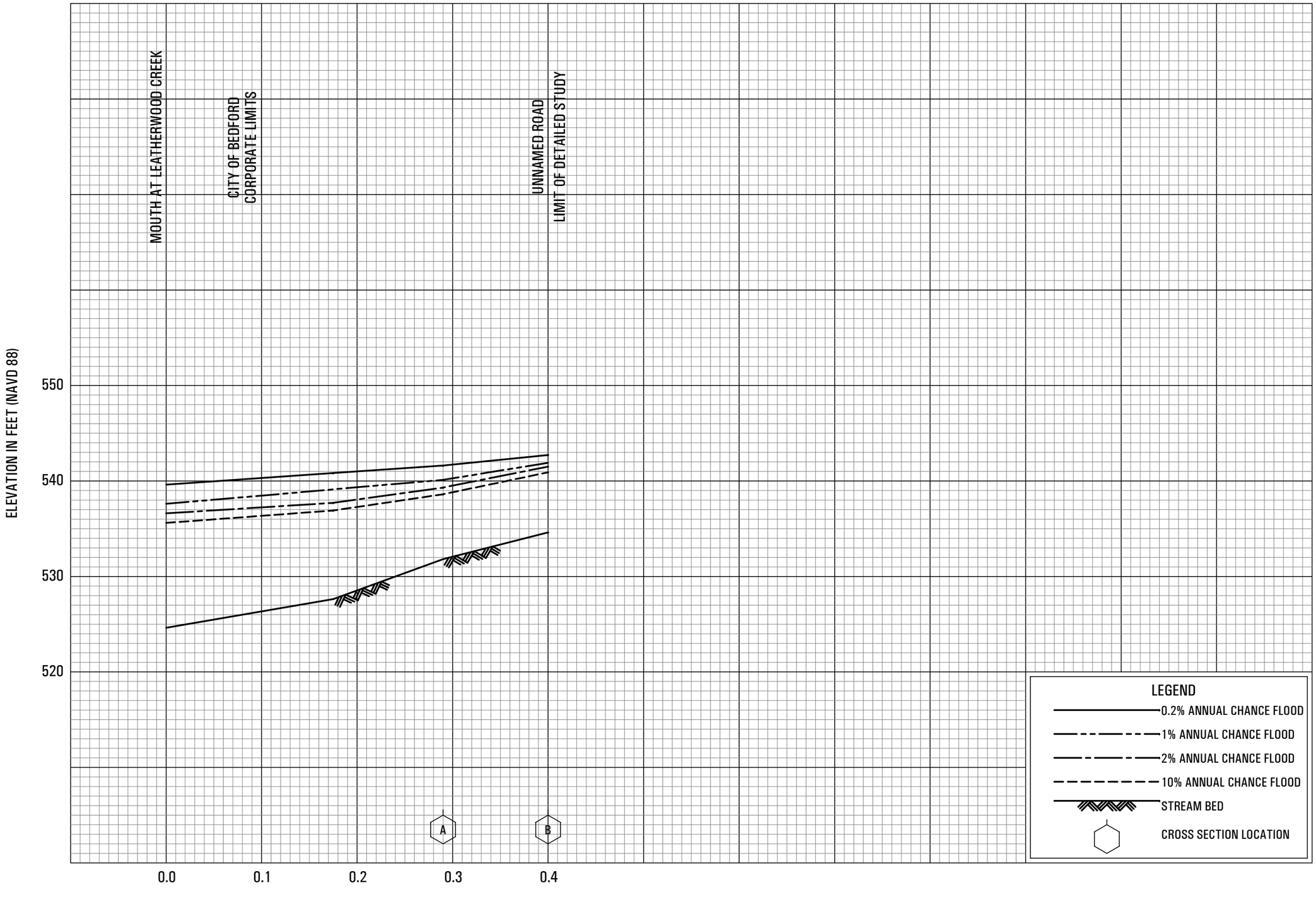
LEATHERWOOD CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LAWRENCE, IN

AND INCORPORATED AREAS

02P



FLOOD PROFILES

SOUTH FORK LEATHERWOOD CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LAWRENCE, IN

AND INCORPORATED AREAS

03P